

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
3 February 2005 (03.02.2005)

PCT

(10) International Publication Number
WO 2005/009233 A1

(51) International Patent Classification⁷: **A61B 5/026**, 8/06, G01P 5/00

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KRÜGER, Sascha** [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE). **BORGERT, Jörn** [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).

(21) International Application Number: PCT/IB2004/051207

(74) Agent: **MEYER, Michael**; Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).

(22) International Filing Date: 13 July 2004 (13.07.2004)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

(26) Publication Language: English

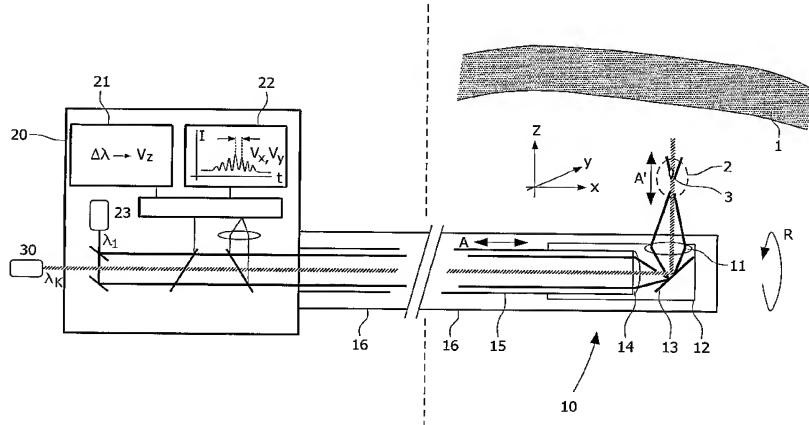
(30) Priority Data:
03102292.4 25 July 2003 (25.07.2003) EP

(71) Applicant (for DE only): **PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH** [DE/DE]; Stein-damm 94, 20099 Hamburg (DE).

(71) Applicant (for all designated States except DE, US): **KONINKLIJKE PHILIPS ELECTRONICS N. V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

[Continued on next page]

(54) Title: MEANS FOR PERFORMING MEASUREMENTS IN A VESSEL



(57) **Abstract:** The invention relates to a facility that can be used, in particular, to measure the flow conditions in a blood vessel. The facility comprises a catheter (16) having a bundle (15) of optical waveguides that connects control and measurement facilities (20) outside the body with an optical unit (10) at the catheter tip. The light (λ_K) generated by a cavitation light laser source (30) is beamed via the catheter (16) and the optical unit (10) into a focus region (2) in the vessel lumen, where it generates cavitation bubbles (3). The movement of the cavitation bubbles (3) with the blood flow is determined by the particle-measuring unit (20) that is based, for example, on phase-Doppler anemometry and/or the Doppler shift. As a result of suitable design of the optical unit (10), the focus region (2) can be displaced as desired radially and rotationally inside the vessel so that a vessel cross section can be scanned in a spatially resolved way. Furthermore, a spectral analysis of the light arriving from the focus region (2) is possible in order, for example, to analyze the chemical composition in this region. The reaching of the vessel wall (1) can be detected by the moving focus region (2) and used for a vessel measurement and/or to switch off the cavitation light laser (30).

WO 2005/009233 A1



FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.